

# Naval Mining and Arms Control

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## Summary

The fall of the former Soviet Union spawned worldwide reductions in military force structures, which, in turn, caused governments and their defense industrial bases to become more aggressive. "A disturbing image is forming: ever more transfers driven by shrinking defense industries placing increasingly more capable weapons in troubled regions. The exporting states in turn feel compelled to develop and produce even more advanced weapons to counter this proliferation. This increasingly vicious circle is indeed worthy of prevention or early treatment" [1].

The U.S. arms-control policy challenge is to recognize and balance competing national security, foreign policy, and economic interests. Conventional arms transfers to friendly regimes can contribute to both national security and foreign policy, with economic benefits. But these same transfers to pariah states, despite the economic benefits, can dramatically undermine regional stability and U.S. national security. Can today's friendly state be tomorrow's pariah state? Increasing the capabilities of potential adversaries can increase the risk to U.S. and allied military personnel in the event of war.

The Presidential Advisory Board on Arms Proliferation Policy, tasked to advise the President on implementation of the U.S. conventional arms-transfer policy, suggested factors that contribute to the proliferation of strategic and advanced conventional military weapons and technologies [1]. "Control of end items could focus on advanced conventional weapons and on especially repugnant weapons of lesser military utility"[1]. Reference [2], companion to [1], gives examples of these advanced conventional weapons: "Some examples of weapons with these characteristics are submarines, stealth aircraft, advanced sea and land mines..."

Representatives from France, Sweden, and Switzerland have suggested bans on naval mines in conjunction with current debates on land-mine restrictions debates [3]. Are there germane implications of such restrictions for the U.S. economy? "Exports are also being increasingly viewed as a mechanism to maintain the defense industrial base, a rising concern as the procurement of domestic weapons is falling" [2]. In the case of naval mines, concerns about the U.S. defense industrial base are essentially nil. Thus, control of naval mines should focus on the balance between national security and foreign policy. Then, because of the indiscriminate nature of naval mines, like that of land mines, several additional issues require attention. Can technology offer a discriminate or acceptable solution? Or would we prefer to have fewer mines available to adversaries that we would have to counter? Could naval mines serve as an arms-control bargaining chip?

## Introduction

At the Fourth Meeting of Government Experts at the UN Review Conference on the Convention on Conventional Weapons (CCW) in January 1995, the ongoing debate on the proposed land-mine restriction continued. Discussions relative to adaptation of new protocols included Swedish and Swiss pro forma references to proposals for naval mines [4]. The Scientific Advisor for Arms Control at the Office of the U.S. Secretary of Defense also reported that representatives from France, Sweden, and Switzerland have suggested bans on naval mines [3]. He confirmed that no international protocols currently restrict naval mines or include them in voluntary weapon-transfer reporting covered by the UN Arms Register.<sup>1</sup>

The *Report of the Presidential Advisory Board on Arms Proliferation Policy* [1] also suggests a potential link between naval mines and the current activity to limit or ban land mines. This five-member board, established by Executive Order 12946 on January 20, 1995, advises the President on implementation of U.S. conventional arms-transfer policy. It conducted a study that focused on [1]:

- Factors that contribute to the proliferation of strategic and advanced conventional military weapons, as well as related equipment and technologies
- Policy options that are available to the United States to inhibit such proliferation.

The board recognized that conventional arms transfers to friendly regimes can contribute to our national security. Because militarily useful technologies are increasingly commercial in origin, export controls can constrain the vigor of our export economy. In contrast, unregulated proliferation of conventional arms and technologies, especially into the hands of unfriendly states, can dramatically undermine regional stability and U.S. national security. Unregulated proliferation can not only encourage arms races, but, by enhancing the capability of potential adversaries, it can also increase the risk to U.S. and allied military personnel and materiel in the event of war.

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<sup>1</sup> Neither land mines nor U.S. munitions list, controlled by the State Department; the International Traffic in Arms (ITAR) regulates commercial and naval mines are contained in the UN Arms Register [5]. Both are on the government sales of land or naval mines as subsets of category 5: military explosives of the U.S. munitions list [6].

## Post-Cold War arms market

The economic stresses brought on by the fall of the former Soviet Union and the related communist governments in East European satellite states, the decline in the U.S. defense procurement budget, and worldwide reductions in military force structures have caused governments and their defense industrial bases to become more aggressive. They are trying to sell advanced weapons and technologies, which had been reserved for their own armed forces, abroad.

Since the end of the cold war the constant dollar value of conventional weapons exported by the six major suppliers has dropped by more than half, mostly because of a sharp decline in exports from the former Soviet Union.

Accompanying this overall decline in exports, domestic arms procurement in supplier countries also has dropped precipitously, leaving excess weapons production capacity worldwide. As a result, economic pressures to export advanced weapons and technologies have increased, exacerbated by a growing interest in high-end weapons and technology stimulated in part by the Gulf War [1].

More than 35 countries are able to export conventional weapons (admittedly of widely varied levels of capability) [1]. "Regional conflicts, no longer constrained by the bipolar system, have flared, and have increased demand for items such as antitank weapons and artillery, which many less industrialized countries can produce. These factors have helped to create an environment conducive to the emergence of new or strengthened supplier states" [2]. Until they have a more equal share of the arms market, some weapons and technologies suppliers indicate that they would not support a restraint regime [1].

In addition to the economic incentives, conventional arms transfers have offered a seemingly benign alternative to nuclear proliferation. Those transfers remain the most common means of dissuasion in efforts to discourage new regimes from acquiring nuclear weapons.

The experience of the U.S.-led coalition war against Iraq indicates the dangers of a laissez-faire approach to the international trade in conventional arms and technologies. Western militaries confronted an Iraqi arsenal made up largely of weapons and technologies provided by the industrialized countries, prompting recognition that the political will to control the military technology trade was far too weak [1].

The problem is exacerbated by the lack of internationally accepted criteria for categorizing undesirable arms and technology exports. Are they offensive or

defensive by nature? In many cases, they can be both. A tank or a naval mine, for example, could be employed offensively and defensively, depending on the proclivities of the regime. And who defines potential aggressors? "...while it may be possible at any given time to identify potential aggressors, today's peace-loving state may be tomorrow's pariah or *vice versa*" [1].

## Which weapons to control

The Presidential Advisory Board on Arms Proliferation Policy suggested factors that contribute to the proliferation of strategic and advanced conventional military weapons and technologies.

Control of end items could focus on advanced conventional weapons and on especially repugnant weapons of lesser military utility. In many ways, the most threatening advanced conventional weapons are those that possess certain characteristics, including autonomous (fire-and-forget) operation, high accuracy, long range, and/or the ability to defeat countermeasures [1].

The companion reference to [1], reference [2], gives examples of these advanced conventional weapons:

Some examples of weapons with these characteristics are submarines, stealth aircraft, advanced sea and land mines, advanced missiles and munitions, tactical ballistic missiles and cruise missiles with advanced conventional warheads, and directed-energy weapons.

The Presidential Board also suggested:

Another approach would be to emphasize restraint in the sale of weapons that raise international concerns because of the risks they pose to noncombatants or because of their perceived repugnance even when used on the battlefield. A candidate list of such weapons, known by some as 'weapons of ill-repute,' would include certain incendiary and fragmentation weapons, weapons easily diverted to terrorist use such as advanced man-portable air defense systems, and weapons currently under U.S. and international review, such as blinding lasers and antipersonnel mines. Discussions of global bans on the export of weapons in which no government has a significant military stake and that pose particular risks to noncombatants could be a reasonable starting point for

beginning a multinational dialogue on technology transfer restraint [1].

Which of the weapons' attributes described in report of the Presidential Advisory Board could also refer to naval mines? The advanced conventional weapons characteristics noted include "autonomous (fire-and-forget) operation, high accuracy, long range, and/or the ability to defeat countermeasures" [1]. Most naval mines are fire-and-forget (except for command-controlled mines), and some contain counter-countermeasure features and stealthy designs. Future mines may include complex mobility features, and sensors could be made to accurately target specific platforms. Reference [2] concurs that naval mines contain these advanced conventional weapons characteristics.

"Weapons of ill-repute" characteristics include "weapons in which no government has a significant military stake and that pose particular risks to noncombatants" [1]; both of these characteristics are arguably applicable to naval mines.

- Adversaries may consider naval mines a significant military equalizer. Because they can't counter the U.S. Navy on equal terms; they resort to weapons like mines and diesel submarines. These autonomous weapons can perform as well for unsophisticated militaries as for sophisticated ones, thereby offsetting inadequacies in training and organization. Some regional adversaries may choose to replicate purchased mines and develop indigenous production capabilities [1].
- Mines have been notorious historically for striking noncombatants as well as combatants. In "go-for-bust" global wars like the ones we've survived this century, we were interested in controlling both enemy combatants and noncombatants delivering war supplies. Our mines were successful in sinking and controlling both. This indiscriminate feature of mines was not viewed as successful when CIA-laid mines in Nicaraguan harbors struck allied (UK and French) and then-Soviet ships. This international disaster clearly exemplifies the shame associated with the mines' indiscriminate nature [7].

These characteristics also make naval mines potentially attractive to terrorist groups or states.

Can technology transform naval mines into discriminate weapons? Accurate, advanced conventional weapons can destroy specific targets without the collateral damage and civilian casualties likely to occur with current naval mines. This accuracy is what makes the military use of conventional weapons less constrained by political circumstances.

## **Implications for the U.S. economy**

Arms exports contribute to the U.S. economy and defense industrial base in three ways:

- They can provide income for industry and jobs for workers.
- If they are produced coincident with U.S. DoD production, they can lead to increased economies of scale, lower costs to DoD, and potentially more marketable products for off-shore sales.
- If they are produced during lapse periods of U.S. DoD production, they can keep production lines open and skilled workers together and employed, thus saving DoD the cost of either maintaining or restarting the production line.

Would arms-control limitations on naval mines significantly affect the U.S. economy or defense industrial base? No.

Given the current lack of production of U.S. naval mines, insignificant income and only a small number of jobs would result from naval mine production. Naval mines have not been much of an arms export commodity either. The Navy International Programs Office (IPO) checked with various desk officers and reported only a single foreign request for U.S. naval mines. In a letter dated 15 March 1996, Taiwan, on behalf of its Navy, requested price and availability data on Mk 52 and Mk 55 bottom-influence mines and Mk 57 moored-influence mines [8]. The Program Executive Office for Mine Warfare, in response to Navy IPO queries on the Taiwanese request, responded that "these systems are not available from U.S. Navy stock, and due to old technology, these systems cannot be procured" [9].

## **Conclusions**

The challenge for U.S. arms-control policy is to recognize and balance competing national security, foreign policy, and economic interests. In the case of naval mines, the U.S. economy and defense industrial base concerns are essentially nil. Thus, control of naval mines should focus on the balance between national security and foreign policy. Then, because of the indiscriminate nature of naval mines, like that of land mines, several additional issues require attention. Can technology offer a discriminate or acceptable solution? Or would we prefer to have fewer mines available to adversaries that we would have to counter? Could naval mines serve as an arms-control bargaining chip?

## References

- [1] Dr. Janne E. Nolan et al. *Report of the Presidential Advisory Board on Arms Proliferation Policy*, 1996
- [2] Marcy Agmon et al. *Arms Proliferation Policy: Support to the Presidential Advisory Board*. International Security and Defense Policy Center of RAND's National Defense Research Institute, MR-771, 1996
- [3] Study team discussions with Dr. Ping Lee and staff, Scientific Advisor for Arms Control at the Office of the U.S. Secretary of Defense, 24 October 1996
- [4] *UN Review Conference on the Convention on Conventional Weapons (CCW): Report on the Fourth Meeting of Government Experts*, SECSTATE WASH DC message 260229Z Jan 95, Confidential
- [5] Phone conversation, 10 November 1996, Sabrina Edlow (study team member) and LT Tom Wingfield, Intelligence Officer assigned to the Center for Naval Analyses
- [6] Phone conversation, 26 November 1996, Sabrina Edlow and John Joyce, Defense Technical Security Administration (DTSA)
- [7] Sabrina Edlow. *Arms Control*. Unclassified, Apr 1997, (CNA Information Memorandum 507)
- [8] E-mail, 18 November 1996, Mark Pfundstein, Senior Intelligence Officer assigned to the Center for Naval Analyses, to Sabrina Edlow
- [9] Facsimile, 4 December 1996, Margie Cowell, Navy International Programs Office (IPO), to Sabrina Edlow